CLAIMS

What is claimed is:

5   1.   A data sampling method for extracting, on a computer, a set of data from a
population data group, comprising the steps of:

receiving a component ratio for a plurality of attributes associated with a
composition condition;

10   determining an extractable amount for each of said plurality of attributes;

calculating a target extraction amount for each of said plurality of attributes
based at least partially on said component ratio; and

if a corresponding target extraction amount for a given attribute, selected
from said plurality of attributes, exceeds a corresponding extractable amount for

15   said given attribute, adjusting said corresponding target extraction amount to a
value that is equal to or less than said corresponding extractable amount and
retaining said component ratio within a predetermined range.

2.   The data sampling method according to Claim 1 wherein said population data group

20   comprises loan information and said steps further comprise extracting said loan
information in accordance with said calculated target extraction amounts whereby a
group of loans to be merchandised are identified.

3.   A data sampling method for extracting, on a computer system, a set of data from a
population data group comprising the steps of:

receiving a component ratio for each of a plurality of composition

5   conditions;

determining an extractable amount for each attribute value combination in
said plurality of composition conditions;

calculating a target extraction amount for each attribute value combination;
and

10   adjusting a subset of said target extraction amounts utilizing a diagonal
replacing adjustment operation wherein said target extraction amount is less than
or equal to said extractable amount for each of said attribute value combinations
and said component ratios are retained within a predetermined range.

15   4.   The data sampling method according to Claim 3, wherein said plurality of
composition conditions form an n-dimensional space and said diagonal replacing
adjustment operation is performed on a two-dimensional coordinate plane that cuts
through said n-dimensional space.

5. The data sampling method according to Claim 4, wherein said diagonal replacing adjustment operation comprises the steps of:

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       selecting four target extraction amounts from four unique cells within said two-dimensional coordinate plane and designating two of said four target extraction amounts as a first group and designating the remaining two of said four target extraction amounts as a second group;

       decreasing each of said two target extraction amounts in said first group by a predetermined value; and

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       increasing each of said two target extraction amounts in said second group by said predetermined value.

6. The data sampling method according to Claim 3 wherein said data sampling method further comprises the step of receiving a sampling condition specifying a total

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extraction amount and said step of adjusting said subset of target extraction amounts further comprises the step of decreasing said total extraction amount without changing said component ratios.

7. The data sampling method according to Claim 3 wherein said population data group

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comprises loan information and said steps further comprise extracting said loan information in accordance with said calculated target extraction amounts whereby a group of loans to be merchandised are identified.

8. A data manipulation method performed by a data processing apparatus for sampling a population data group with a plurality of composition conditions including a plurality of component ratios, wherein association data, comprising at least a target extraction amount for each attribute value combination in said plurality of composition conditions, are adjusted without changing said plurality component ratios by performing the steps of:

selecting four attributes, two attributes from each of two composition conditions, selected from said plurality of composition conditions, to provide four attribute value combinations of two each of said four attributes;

selecting, from said four attribute value combinations, a first combination having a first attribute and a second attribute;

determining, from said four attribute value combinations, a second combination having a third attribute and a fourth attribute, wherein said third attribute is not equal to said first attribute, said third attribute is not equal to said second attribute, said fourth attribute is not equal to said first attribute, and said fourth attribute is not equal to said second attribute;

decreasing said target extraction amount in said association data for each of said first combination and said second combination by a predetermined value; and

increasing said target extraction amount in said association data for each of a third combination and a fourth combination by said predetermined value, wherein said third combination and said fourth combination comprise the remaining two combinations from said four attribute value combinations after excluding said first combination and said second combination.

9. The data manipulation method according to Claim 8, wherein said plurality of composition conditions comprise at least three composition conditions.

10. A database system for extracting data from a population data group according to a predetermined sampling condition, comprising:

a sampled population database storing said population data group;

a sampling condition input section for inputting a data extraction request, said predetermined sampling condition comprising a total extraction amount, a composition condition, and a component ratio of attributes in said composition condition; and

a data processing section for extracting said data from said sampled population database based on said predetermined sampling condition, input through said sampling condition input section, wherein said data processing section:

determines an extractable amount for each of said attributes;

calculates a target extraction amount for each of said attributes based at least partially on said component ratio;

if a corresponding target extraction amount for a given attribute, selected from said attributes, exceeds a corresponding extractable amount for said given attribute, adjusts said corresponding target extraction amount to a value that is equal to or less than said corresponding extractable amount and retains said component ratio within a predetermined range; and

extracts said data from said population data group based at least partially on said adjusted corresponding target extraction amount.

11. The data base system to Claim 10 wherein said data base system is used to extract loan information from said population data group, said loan information identifying a group of loans to be merchandised.

12. A database system for extracting data from a population data group according to a predetermined sampling condition, comprising:

a sampled population database storing said population data group;

5   a sampling condition input section for inputting a data extraction request, said predetermined sampling condition comprising a total extraction amount, a plurality of composition conditions, and a component ratio of attributes in each of said plurality of composition conditions; and

a data processing section for extracting said data from said population

10   database based on said sampling condition, input through said sampling condition input section, wherein said data processing section:

determines an extractable amount for each attribute value combination in said plurality of composition conditions;

calculates a target extraction amount for each attribute value combination

15   in said plurality of composition conditions;

adjusts a subset of said target extraction amounts utilizing a diagonal replacing adjustment operation; and

extracts said data from said population data group based at least partially on said adjusted subset of said target extraction amounts.

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13. The data base system according to Claim 12, wherein said plurality of composition conditions form an n-dimensional space and said diagonal replacing adjustment operation is performed on a two-dimensional coordinate plane that cuts through said n-dimensional space.

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14.   The data base system according to Claim 13, wherein said diagonal replacing adjustment operation is performed by said data processing section by:

selecting four target extraction amounts from four unique cells within said two-dimensional coordinate plane and designating two of said four target extraction amounts as a first group and designating the remaining two of said four target extraction amounts as a second group;

decreasing each of said two target extraction amounts in said first group by a predetermined value; and

increasing each of said two target extraction amounts in said second group by said predetermined value.

15.   The database system according to Claim 12 wherein said data processing section decreases said total extraction amount without changing said component ratios in response to adjusting said subset of said target extraction amounts.

16.   The database system according to Claim 12 wherein said database system is used to extract loan information from said population data group, said loan information identifying a group of loans to be merchandised.

17.   An article of manufacture for use in a computer system tangibly embodying computer instructions executable by said computer system for performing process steps, wherein said process steps extract a set of data from a population data group and comprise:

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          receiving a component ratio for a plurality of attributes associated with a composition condition;

          determining an extractable amount for each of said plurality of attributes;

          calculating a target extraction amount for each of said plurality of attributes

10   based at least partially on said component ratio; and

          if a corresponding target extraction amount for a given attribute, selected from said plurality of attributes, exceeds a corresponding extractable amount for said given attribute, adjusting said corresponding target extraction amount to a value that is equal to or less than said corresponding extractable amount and

15   retaining said component ratio within a predetermined range.

18.   The article of manufacture according to Claim 17 wherein said population data group comprises loan information and said process steps further comprise extracting said loan information in accordance with said calculated target extraction amounts

20   whereby a group of loans to be merchandised are identified.

19.   An article of manufacture for use in a computer system tangibly embodying computer instructions executable by said computer system for performing process steps, wherein said process steps extract a set of data from a population data group and comprise:

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receiving a component ratio for each of a plurality of composition conditions;

determining an extractable amount for each attribute value combination in said plurality of composition conditions;

10   calculating a target extraction amount for each attribute value combination; and

adjusting a subset of said target extraction amounts utilizing a diagonal replacing adjustment operation, wherein said target extraction amount is less than or equal to said extractable amount for each of said attribute value

15   combinations and said component ratios are retained within a predetermined range.

20.   The article of manufacture according to Claim 19 wherein said plurality of composition conditions form an n-dimensional space and said diagonal replacing

20   adjustment operation is performed on a two-dimensional coordinate plane that cuts through said n-dimensional space.

21.   The article of manufacture according to Claim 20, wherein said diagonal replacing adjustment operation comprises:

selecting four target extraction amounts from four unique cells within said

5   two-dimensional coordinate plane and designating two of said four target extraction amounts as a first group and designating the remaining two of said four target extraction amounts as a second group;

decreasing each of said two target extraction amounts in said first group by a predetermined value; and

10   increasing each of said two target extraction amounts in said second group by said predetermined value.

22.   The article of manufacture according to Claim 19, wherein said process steps further comprise the step of receiving a sampling condition specifying a total extraction

15   amount and said step of adjusting said subset of target extraction amounts further comprises decreasing said total extraction amount without changing said component ratios.

23.   The article of manufacture according to Claim 19 wherein said population data

20   group comprises loan information and said process steps further comprise extracting said loan information in accordance with said calculated target extraction amounts whereby a group of loans to be merchandised are identified.

24.   A method for selecting items of loan information from a population data group

residing in a sampled population database wherein said selected items of loan

information form a pool of loans to be securitized, said method comprising the steps

of:

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establishing a credit risk for said pool of loans;

providing a sampling condition comprising multi-dimensional component

ratios in accordance with said credit risk and a total extraction amount as the

desired number of said items of loan information to form said pool of loans; and

10   utilizing a diagonal replacing adjustment database system for the selection of

said items of loan information whereby said pool of loans is formed in

accordance with said credit risk and said pool of loans comprises a number of

said items of loan information that is equal to or less than said total extraction

amount.

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